THE THIRD LANGUAGE

LTF 3LANG

Many of you know that the ZX family of computers (including Spectrum/TS2068) use a "third language" to perform the precise floating-point calculations that our machines are renowned for. You also probably know that it is "FORTH-like," a fact that has been driven into the ground since the early days. You may NOT know, however, that it is much EASIER than FORTH, yet very powerful. You may also not know that its direct use can greatly speed up your number-crunching.

If you use this language simply to replace a single BASIC expression, the resulting speed increase will not be phenomenal. However, in multiple line (or multiple statement) algorithms, the improvement can be impressive. I recently used this CALC language (as I'll call it from now) to rewrite the main evaluation loop for the Mandelbrot set. The resulting code was not only much more compact, but also ran 2.5 TIMES FASTER!)*

*To check this out LOAD "MANDEL1" or "MANDEL2" and run. Time how long it takes to run these parameters:

REAL = -.2421875
IMAG = .9635417
SIDE = .17
LIMIT = 100
B/W = 1.

Don't hold your breath. Now LOAD "MANDEL3" and use the same parameters.

I'd love to share some of what I've learned about this, but on recalling the lukewarm response to our FORTH series I think it's better if we will wait until (if) enough readers are interested.

Meanwhile, if you feel like diving right in, arm yourself with Hot Z II (disassembles the language) and Ian Logan's books. Here are a few quirks and traps that I encountered which might help you out:

1: Ian Logan calls the commands for 32h and 33h "jumps." They are not; they are simple tests.

2: The relative jump if true (JRT) clears the last stack entry. The unconditional jump (JRU) does not.

3: The inequality tests (N<M, N<=M, etc.) followed by conditional jump (JRT) don't always work properly. The problem appears to be the "inequality" aspect; in other words N=M works, but N=>M, etc. only works partially (only if equal).

4: I "solved" the problem in #3 by replacing (N>M) with SUB followed by (N>0?). This worked fine as long as it was located below 4100h, giving flat WRONG answers when the code was moved anywhere else! So if code that SHOULD run DOESN'T, try moving it elsewhere.